OIPE IAP46
JAN 20 2006
PATENT & TRADEMARK OFFICE

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PATENTS

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: LUTZ BURKHARDT, L-1 (PCT)

SERIAL NO: 10/530,386 GROUP: 2862

FILED: APRIL 6, 2005

TITLE: DEVICE FOR THE DETERMINATION OF FLOW PARAMETERS FOR A FLUID AND METHOD FOR OPERATING SUCH A DEVICE

THIRD SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

MAIL STOP AMENDMENT
Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Supplemental to the Information Disclosure Statement filed on April 6, 2005, the Supplemental Information Disclosure Statement filed on June 21, 2005, and the Second Supplemental Information Disclosure Statement dated January 10, 2006, Applicant is providing herewith a concise explanation of the relevance as presently understood of DE 196 05 638, which was cited in the April 6, 2005 Information Disclosure Statement and of DE 199 24 400, which was cited in the January 10, 2006 Second Supplemental Information Disclosure Statement.

With respect to DE 38 10 240 and DE 44 07 209, which were also cited in the January 10, 2006 Second Supplemental Information Disclosure Statement, Applicant wishes to advise that

U.S. Patent No. 4,846,133 is the English language equivalent DE 38 10 240 and that U.S. 2001-0025526 is the English language equivalent of DE 44 07 209. A Form-1449 listing these citations is also enclosed.

The document **DE 196 05 638 C1** is a German patent issued for the Applicant of the current US Patent Application No. 10/530,386. This prior art discloses a method and device for detecting incipient fires. The conventional device comprises a detector (1) for detecting a fire parameter and at least one supply line (15) provided with intake opening (18), the cross section of which increases as the distance from a fan (2) feeding samples of ambient air to the detector (1) via the supply line (15) increases.

In the prior art according to **DE '638** a system is taken into account which is suitable and adapted to detect incipient fires with an improved sensitivity. For this purpose, in the conventional device, all intake bores (18) in the supply line (15), which form the intake openings (18), have the same diameter, wherein each intake bore (10) is covered by a foil (16) comprising a punched hole (21) which has a predetermined, smaller diameter than the intake bore (10) and is arranged concentrically

therewith so as to give the intake opening (18) a reduced cross section.

According to a second aspect of document **DE '638**, the conventional device is characterized in that all intake bores (10) in the supply line (15) have the same diameter, wherein each intake bore (10) is covered by a foil (16) comprising a punched hole (21) which has a predetermined, smaller diameter than the intake bore (10) and is arranged concentrically therewith so as to give the intake opening (18) a reduced cross section.

Further, document **DE '638** discloses a method of detecting incipient fires in rooms or electronic apparatus, the conventional method comprising the following steps:

- continuously feeding of air samples from a room to be monitored to a detector (1) for detecting a fire parameter, wherein the feeding of the air samples is performed via at least one supply link (15) which is arranged in the room to be monitored and which comprises a plurality of intake openings (18); and

- emitting a signal in accordance with predetermined criteria by an evaluation unit electrically connected to the detector (1), if the detector detects a fire parameter.

In order to enhance the sensitivity of the detecting of incipient fires, the conventional method according to **DE '638** further comprises the step of gluing a foil (16) over each of the intake bores (10) in the supply line (15), wherein said foil (16) comprises a punched hole (21) such that the hole (21) is aligned with the intake bore (10) in the supply line (15), and wherein the diameter of the holes in the foils reduces the effective cross section of the intake openings.

Hence, with respect to the subject-matter of the present application, prior-art document **DE '638** discloses an aspirative fire recognition apparatus, which constantly takes samples of a room to be monitored, and feeds them to a detector, via a pipeline system, for detecting a fire characteristic value. The conventional apparatus further comprises means for determining flow parameters (air stream sensor). However, document **DE '638** is silent with respect to the detailed structure and function of the air stream sensor used in the conventional system.

The document **DE 199 24 400 C1** discloses a fire detector and a method for detecting a fire. The conventional fire detector (1) comprises a measurement chamber (3), which includes at least one fire detector (4), and a flow channel (5) which connects the measurement chamber (3) to at least one monitoring point (room to be monitored). The flow channel (5) has at least one gas inlet aperture (6) at the monitoring point for the taking of gas samples.

The conventional device further comprises a fan (7) having an electrical drive motor (8). The fan is provided for the conveyance of the gas samples from the monitoring point to the fire detector (4). Further, a volumetric flow measuring means is provided in order to measure the volumetric flow of the gas supplied to the fire detector (4). The flow measuring means is connected to a comparison means for comparing the volumetric flow measuring signal (12) with at least one prescribed volumetric flow limit value (15a, 15b). The volumetric flow measuring means includes a power measuring means (10) for measuring the electric power consumption of the drive motor (8) and a rotational speed sensor (11) for measuring the rotational speed of the drive motor (8). The power measuring means (10) and the rotational speed sensor (11) for the indirect determination of the volumetric flow

measuring signal (12) are connected to the inputs of a quotient former.

According to one embodiment of the conventional system according to document **DE '400**, the volumetric flow measuring means includes a power measuring means (10), which includes a measuring signal output, for measuring the electrical power consumption of the drive motor (8), and an angle-of-rotation sensor having a measuring signal output for a rotational speed reciprocal value signal, which is inversely proportional to the rotational speed of the drive motor. The measuring signal outputs of the power measuring means and of the angle-of-rotation sensor for the indirect determination of the volumetric flow measuring signal (12) are connected to the inputs of the multiplier.

According to another embodiment of the conventional fire detector, a temperature sensor (22) for measuring the operation temperature of the electrical drive motor (8) and the temperature of the gas samples is provided. The temperature sensor (22) is part of a means for compensating for the temperature of the volumetric flow measuring signal (12) and for adapting the temperature of the volumetric flow limit value (15a, 15b).

In the conventional system, the drive motor (8) may be connected to an electrical source of operating voltage, which has a constant voltage effective value, wherein the power measuring means includes an electrical motor current measuring means (23). As an alternative, the drive motor (8) may also be connected to an electrical current source which has a constant current effective value, wherein the power measuring means includes an electrical voltage measuring means (25).

In the conventional method for detecting a fire, a gas sample is taken at least one monitoring point and supplied to a measurement chamber (3) and a fire detector (4) using a fan (7), the fan (7) including an electrical drive motor (8). The gas sample is taken via at least one flow channel (5) to the measurement chamber (3). The volumetric flow of the gas supplied to the fire detector (4) is measured, and the volumetric flow measuring signal(12) is compared with at least one prescribed volumetric flow limit value (15a, 15b). The electrical power consumption and the rotational speed of the fan drive motor (8) are measured and the volumetric flow measuring signal (12) is indirectly determined by the formation of quotient from the measuring signals for the power consumption and the rotational speed.

According to another aspect of the conventional method, changes in the measuring signals for the electrical power consumption and the rotational speed of the drive motor are determined, and, if there is a change in these measuring signals in the same direction, a trend value, representing a change in the density of the ambient gas, is changed, and the volumetric flow measuring signal (12) is compensated for with the trend value and the volumetric flow limit value (15a, 15b) is adapted according to the trend value.

According to another aspect of the conventional method, the electrical power consumption and the rotational speed reciprocal value of the fan drive motor (8), which reciprocal value is inversely proportional to the rotational speed, are measured, wherein the volumetric flow measuring signal (12) is indirectly determined by the formation of the products from the measuring signals for the power consumption and the rotational speed reciprocal value. Further, changes in the measuring signals for the electrical power consumption and the rotational speed reciprocal value of the drive motor (8) are determined, wherein, if there is a change in these measuring signals in the opposition direction, a trend value, representing a change in the density of the ambient gas, is changed, and the volumetric flow measuring

signal (12) is compensated for with the trend value and at least one volumetric flow limit value (15a, 15b) is adapted according to the trend value.

In addition, a temperature measuring signal is determined for the operating temperature of the electrical drive motor and for the temperature of the gas samples taken, and the volumetric flow measuring signal (12) and at least one volumetric flow limit value (15a, 15b) are changed in order to compensate for the temperature.

In summary and with respect to the subject-matter of the present application, prior art document **DE '400** discloses a system for monitoring the volumetric flow in an intake pipe system. However, document **DE '400** teaches to omit a designated air stream sensor in order to simplify the structure of the system. Instead of an air stream sensor, in the conventional system according to document **DE '400**, the electrical power consumption and the rotational speed of the drive motor are taken into account in order to obtain measuring signals which, in turn, are used to derive data with respect to the volumetric flow.

Because this Information Disclosure Statement (IDS) is being filed before the issuance of a first Office Action on the merits, it is believed that no fee is due. However, the Commissioner is hereby authorized to charge Deposit Account No. 03-2468 for any additional fees or credit any overpayment in connection with this IDS. It is respectfully requested that the foregoing IDS be incorporated into the official file of the present patent application.

Respectfully submitted,
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Enclosures: PTO-1449 form and four references

I hereby certify that this correspondence is being deposited with the U.S. Postal Service as first class mail in an envelope addressed to: Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on January 17, 2006.

Kelly Espitia

FORM PTO-1449 (REV. 7-80) U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTY. DOCKET NO. : BURKHARDT, L-1

SERIAL NO. 10/530,386

APPLICANT : LUTZ BURKHARDT

FILING DATE: 04/06/05

GROUP: 2861

OIPE IAP46 JAN 20 2006 PATENT & TRADEMARK OFFICE

LIST OF REFERENCES CITED BY APPLICANT

(Use several sheets if necessary)

U.S. PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	AA	4,846,133	7/1989	Shiraishi et al.			
	AB	2001-0025526	10/2001	Reymann et al.			
	AC						
	AD						
	AE						
	AF						
	AG						
	AH						
	AI						
	AJ						
	AK						

FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES	TRANSLATION NO
	AL	DE 196 05 638	6/1997	Germany				
	AM	DE 38 10 240	2/1989	Germany = US 4,846,133				
	AN	DE 199 24 400	1/2001	Germany				
	AO	DE 44 07 209	1/2001	Germany = US 2001-0025526				
	AP							

OTHER REFERENCES *(Including Author, Title, Date, Pertinent Pages, Etc.)*

	AR		
	AS		

EXAMINER | DATE CONSIDERED

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.